



**HP OpenView NNM SE 1.2  
With Dell OpenManage™  
HIP 3.2**

**USER'S GUIDE**

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# Preface

## About This Guide

This guide is intended for anyone who uses HP OpenView Network Node Manager Special Edition (NNM SE) and version 2.2 or later of the Dell OpenManage Hardware Instrumentation Package (HIP) server management application. It can be used by both new and experienced users who want to learn about Dell HIP features, installation procedures, and operation.



*NOTE: If you are running Intel LANDesk Server Manager 2.52, Dell HIP 2.2 was included in the installation. Installing HP OpenView NNM SE installs Dell OpenManage HIP.*

The chapters and appendixes are summarized as follows:

- Chapter 1, “Introduction,” gives an overview of the product’s features and provides information on obtaining technical assistance.
- Chapter 2, “Installation and Upgrade Procedures,” lists system requirements and provides software installation and upgrade procedures.
- Chapter 3, “Using NNM SE,” describes how to access and use NNM SE and Dell tools. It also describes how to configure Dell HIP alert actions and introduces the program’s online help, your main source of information on how to use Dell HIP icons, menus, and screens.
- Appendix A, “Frequently Asked Questions,” provides answers to frequently asked questions.
- Appendix B, “Tivoli/Enterprise Console Requirements and Installation,” provides instructions for integrating Dell HIP 2.2 with Tivoli/Enterprise Console version 2.6 and Tivoli/Enterprise Console Windows NT Adapter 3.1.
- The glossary defines terms, acronyms, and abbreviations used in this guide.

## Other Documents You May Need

In addition to this *User's Guide*, you may need to refer to the following documentation:

- Your Dell system *User's Guide* provides an overview of system features and hardware installation guidelines and procedures.
- Your Dell system *Installation and Troubleshooting Guide* includes troubleshooting procedures and instructions for using Dell diagnostics to test your computer system.
- The online HP manual, *Using Network Node Manager Special Edition*, contains information on installing, setting up, and troubleshooting the NNM SE software.
- The *Dell Hardware Instrumentation Package v2.2 for Intel LANDesk Server Manager 2.52 User's Guide* provides beneficial information if you are using Dell HIP 2.2 on a Dell PowerEdge 6100 system that has an Intel server monitor module (SMM) card installed.
- The *Dell PowerEdge SDS 100 Storage System Installation and Service Guide* contains information on system features and hardware installation for the Dell PowerEdge Scalable Disk System 100 (SDS 100) storage system.
- The Dell Remote Assistant Card version 2.0 documentation.



*NOTE: Documentation updates are sometimes included with your system or software to describe changes to your system or software. Always read these updates **before** consulting any other documentation because the updates often contain the latest information.*

You may also have one or more of the following documents:

- Operating system documentation is included if you ordered your operating system from Dell. This documentation describes how to install (if necessary), configure, and use your operating system.
- Documentation is included with any options you purchase separately from your system. This documentation includes information that you need to configure and install these options in your Dell computer. Installation instructions for the options are included in your system *User's Guide*, *Installation and Troubleshooting Guide*, or product-specific *Quick Installation Guide*, if applicable. However, to install some options, you may need to refer to accompanying documentation from the option manufacturer.
- Technical information files—sometimes called “readme” files—may be installed on your hard-disk drive or included on your CD to provide last-minute updates about changes to your system or software. Readme files can also contain advanced technical reference material intended for experienced users or technicians.

## Notational Conventions

The following subsections describe notational conventions used in this document.

### Warnings, Cautions, and Notes

Throughout this guide, there may be blocks of text printed in bold type or in italic type. These blocks are warnings, cautions, and notes, and they are used as follows:



**WARNING:** A **WARNING** indicates the potential for bodily harm and tells you how to avoid the problem.



**CAUTION:** A **CAUTION** indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.



*NOTE:* A *NOTE* indicates important information that helps you make better use of your computer system.

### Typographical Conventions

The following list defines (where appropriate) and illustrates typographical conventions used as visual cues for specific elements of text throughout this document:

- *Keycaps*, the labeling that appears on the keys on a keyboard, are enclosed in angle brackets.  
Example: <Enter>
- *Key combinations* are series of keys to be pressed simultaneously (unless otherwise indicated) to perform a single function.  
Example: <Ctrl><Alt><Enter>
- *Commands* presented in lowercase bold are for reference purposes only and are not intended to be typed when referenced.  
Example: " Use the **format** command to . . . ."

In contrast, commands presented in the Courier New font are part of an instruction and intended to be typed.

Example: " Type `format a:` to format the diskette in drive A."

- *Filenames* and *directory names* are presented in lowercase bold.  
Examples: **autoexec.bat** and **c:\windows**
- *Syntax lines* consist of a command and all its possible parameters. Commands are displayed in lowercase bold; variable parameters (those for which you substitute a value) are displayed in lowercase italics; constant parameters are displayed in lowercase bold. The brackets indicate items that are optional.  
Example: **del** [*drive:*] [*path*] *filename* [**/p**]

- *Command lines* consist of a command and may include one or more of the command's possible parameters. Command lines are presented in the Courier New font.

Example: `del c:\myfile.doc`

- *Screen text* is text that appears on the screen of your monitor or display. It can be a system message, for example, or it can be text that you are instructed to type as part of a command (referred to as a *command line*). Screen text is presented in the Courier New font.

Example: The message `No boot device available` appears on your screen.

Example: "Type `c:\overview` and press <Enter>."

- *Variables* are placeholders for which you substitute a value. They are presented in italics.

Example: Novell NetWare 4.*x* (where *x* represents the version number of the software)



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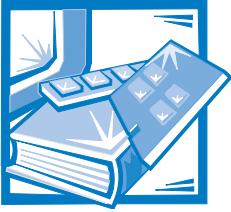
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# CHAPTER 1

## *Introduction*

HP OpenView Network Node Manager Special Edition (NNM SE) enhances your capability to monitor and manage Dell® PowerEdge® servers running Novell® NetWare® and Microsoft® Windows NT® operating systems with Dell OpenManage™ Hardware Instrumentation Package (HIP) 2.2 or later. HP OpenView NNM SE also manages other Dell systems with the Dell Inspector and can be used to manage non-Dell systems.

Through management instrumentation of hardware components specific to Dell systems, HP OpenView NNM SE allows you to access status information about Dell PowerEdge servers as well as Dell PowerEdge Scalable Disk System 100 (SDS 100) storage systems. You can also monitor desktop, workstation, and portable computers.

For Dell PowerEdge servers equipped with Dell Remote Assistant Cards (DRAC), Dell HIP supports out-of-band (via dial-up modem or network interface controller [NIC]) status retrieval and management operations.

The HP online manual, *Using Network Node Manager Special Edition*, contains information on installing, setting up, and troubleshooting the NNM SE software. This manual with the filename **nnmseug.pdf** can be found in the **elecdocs** directory on the *HP OpenView Network Node Manager Special Edition CD*, which also contains additional hardware component user's guides. The *HP OpenView NNM SE 1.2 With Dell OpenManage HIP 3.2 User's Guide* can also be found in the **elecdocs** directory under the filename **hipitg.pdf**.

## ***HP OpenView NNM SE With Dell OpenManage HIP Overview***

The HP OpenView NNM SE with Dell HIP consists of the following components:

- Managed nodes for Windows NT and NetWare
- Management station for Windows NT
- Remote console for Windows NT

## **Managed Nodes**

A managed node is managed by a management station and is viewed from a management console. The Dell OpenManage managed node is a server that runs the Dell HIP. Dell enhancements to the HP OpenView NNM SE management station and management console provide access to management capabilities specific to Dell managed nodes.

### ***Dell OpenManage Managed Node for the Windows NT Server Operating System***

The Dell managed node for the Windows NT Server operating system provides enhanced management of Dell servers running Windows NT with the following instrumentation:

- Dell Desktop Management Interface (DMI) and Simple Network Management Protocol (SNMP) instrumentation — Allows the Dell OpenManage Server Console to provide enhanced management of the Dell managed node servers.
- Dell OpenManage Server Console — Presents the data provided by the managed node in a user interface.
- Dell Inspector — Supports the Microsoft Systems Management Server (SMS) used with the Windows NT server operating system. On systems with SMS, users can map one or more DMI groups to an SMS directory that can be viewed by the SMS administrator.
- DRAC version 2.0 — Allows management of the DRAC version 2.0 card-equipped servers.
- Dell PowerEdge Expandable RAID Controller — Allows management of the disk subsystem(s) of servers installed with Dell PowerEdge Expandable RAID Controllers.
- Adaptec Duralink Server Manager NIC — Allows management of Adaptec NICs.
- Adaptec small computer system interface (SCSI) on Adaptec Comprehensive Input/Output (CI/O) — Allows management of Adaptec SCSI controllers.
- American Power Conversion (APC) PowerNet Console — Allows management of the uninterruptible power supply (UPS) system installed on the managed node. Refer to the APC documentation for more information.
- IBM® local area network (LAN) adapter DMI support — Supports the DMI 2.0 service layer for the IBM 16/4 Peripheral Component Interconnect (PCI) Token-Ring adapter.
- Intel® DMI 2.0 — Supports the DMI 2.0 service layer for the Intel Pro/100B NIC and allows for management information format (MIF) browsing.



*NOTE: For more information, refer to your DRAC version 2.0 documentation.*

## *Dell OpenManage Managed Node for NetWare*

The Dell OpenManage managed node for NetWare provides enhanced management of Dell servers running Novell NetWare with the following instrumentation:

- Dell DMI and SNMP instrumentation — Allows the Dell OpenManage Server Console to provide enhanced management of the Dell managed node servers.
- DRAC version 2.0 — Allows management of the DRAC version 2.0 card-equipped servers.
- Dell PowerEdge Expandable RAID Controller — Allows management of the disk subsystem(s) of servers installed with Dell PowerEdge Expandable RAID Controllers.
- Adaptec Duralink Server Manager NIC — Allows management of Adaptec NICs.
- Adaptec SCSI on Adaptec CI/O — Allows management of Adaptec SCSI controllers.
- APC PowerNet Console — Allows management of the UPS system installed on the managed node. Refer to the APC documentation for more information.

## ***Management Station for Windows NT***

The management station is the system that houses the HP OpenView Network Node Manager databases and background processes. Examples of these background processes include network discovery, interprocess communications, and event processing. The management station is home to a local management console and is the user interface for displaying the network topology, events, and other manageable components. It runs on the Windows NT Server operating system.

The management station provides the following features:

- Dell OpenManage Server Console — Presents the data provided by the managed node in a user interface.
- Dell Inspector — Monitors the remote desktop, workstation, and portable computers. It is also used for SMS integration.
- Dell OpenManage Remote Assistant console application in conjunction with the Dell Remote Assistant Server service — Supports out-of-band (via dial-up modem or NIC) status retrieval and management operations.
- Dell PowerEdge Expandable RAID Controller — Allows management of the disk subsystem(s) of servers installed with Dell PowerEdge Expandable RAID Controllers.
- Adaptec CI/O Array-Based Management System — Manages/monitors servers that have an Adaptec SCSI controller. The controller monitors different channels and the devices configured on each channel.
- Adaptec Duralink SNMP Manager (Web-based management) — Monitors Adaptec NICs.

- APC PowerNet Console — Manages the UPS system installed on the managed node.
- MobileChoice Paging — Allows sending of pages on configurable OpenView events.

## **Remote Console for Windows NT**

The remote console is identical to the local management console except that it exists on a system without the HP OpenView Network Node Manager databases and background processes. The remote console connects to the management station for services and database operations. It runs on the Windows NT Server operating system.

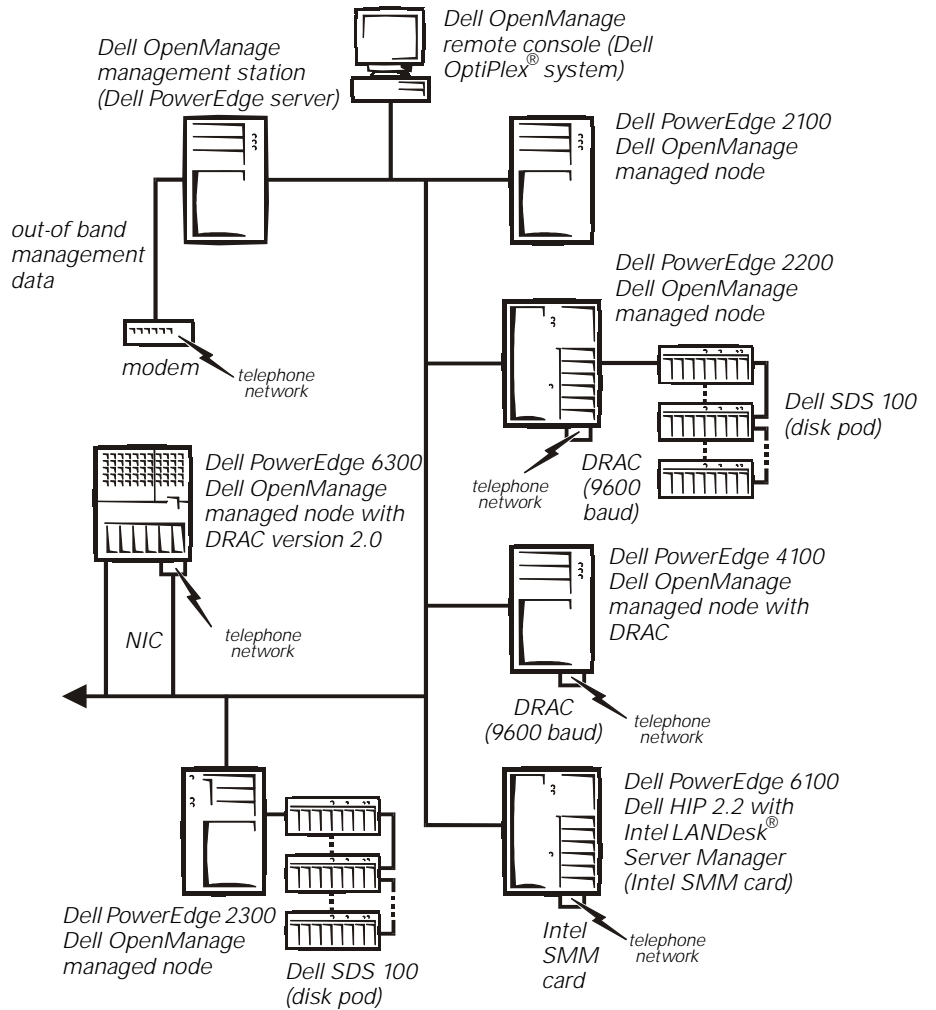
## **Dell OpenManage Network Configuration**

Figure 1-1 provides an example of a network configuration, and Figure 1-2 shows the flow of data through the configuration.

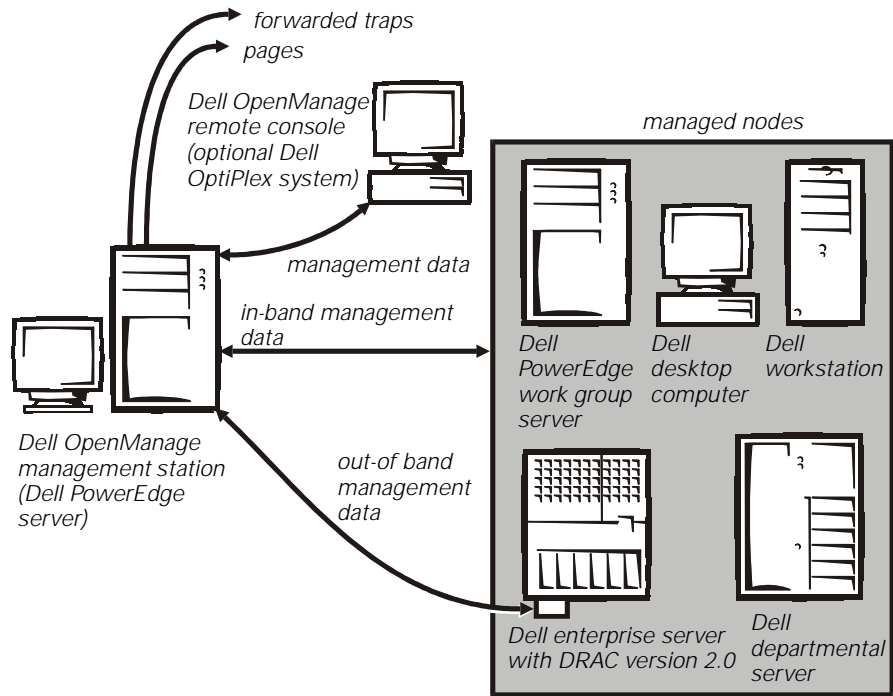
All Dell servers that are managed with HP OpenView Network Node Manager must have the managed node component installed on them. This component monitors various hardware systems on the server for information such as temperature readings, redundant array of independent disks (RAID) status, and so on.

Each managed node then sends its reading to the management station, which presents the data in a user interface. In addition, the management station can be set up to notify the network administrator by digital page or electronic mail when a critical event occurs on one of the managed nodes.

The remote console component allows remote viewing of the data that is available at the management station. Multiple remote consoles can be installed, but only a single instance can be active at a time.



**Figure 1-1. Example of a Dell OpenManage Network Configuration**



**Figure 1-2. Dell OpenManage Management Data Flow in Network**

## **HP OpenView NNM SE With Dell OpenManage HIP Features**

HP OpenView NNM SE with Dell OpenManage HIP has features that apply to all systems and features that are system-specific.

### **General Features**

HP OpenView NNM SE with Dell OpenManage HIP has the following features:

- Support for the following operating systems on management consoles:
  - Microsoft Windows NT Server 3.51 and 4.0
  - Microsoft Windows NT Workstation 3.51 and 4.0





- Support for the following operating systems on managed server nodes:
  - Novell NetWare 4.10 and 4.11
  - Microsoft Windows NT Server 3.51 and 4.0
  - Microsoft Windows NT Workstation 3.51 and 4.0

*NOTE: Refer to your system User's Guide and your operating system documentation.*

- Embedded server management device, device driver, and SNMP and DMI instrumentation that let you manage the enhancement of the Dell PowerEdge servers.
- Dell OpenManage Remote Assistant console application in conjunction with the Dell Remote Assistant Server service for DRAC and DRAC version 2.0 systems.
- Intel LANDesk Server Manager console program for systems equipped with an Intel server monitor module (SMM) card.
- Comprehensive online help.
- Management of integrated SCSI devices.
- Alert subsystem:
  - Paging from the management station regarding alerts from any managed node or DRAC
  - SNMP traps and DMI indications for warnings and failure conditions
  - Self-Monitoring Analysis Reporting Technology (SMART) drive alert notification
  - Ability to set warning thresholds for monitored parameters
  - Ability to receive alerts from systems with probes
  - Alert message generation and data logging to event logs
  - Fault light-emitting diodes (LED) on some systems for local alerting
- Ability to configure automatic local-server actions in response to certain conditions.
- Ability to configure automatic actions using HP OpenView on SNMP traps and events.
- Discovery Monitor and Status Manager, which automatically discover status of nodes.
- Trap Forwarder, which runs a configuration utility for forwarding traps from the management station.

- Dell Inspector, which enables network administrators to do the following tasks:
  - Remotely manage desktop, workstation, and portable computers in a Dell DMI client network
  - View and modify a local system's hardware configuration settings
- SMS integration through the Dell Inspector.
- Active display of the following information:
  - Dell servers with NetWare and Windows NT, running Dell HIP 2.2 or later
  - Dell systems, other than servers, running Dell software/portable instrumentation on the Windows NT and Microsoft Windows® 95 operating systems
- Management of system-supported RAID adapters.
- Tivoli TME 10 Management suite integration. For more information about console requirements and installation, see Appendix B, "Tivoli/Enterprise Console Requirements and Installation."
- Management of NIC using supplied instrumentation.

## System-Specific Features

The following tables present the features of specific systems that use HP OpenView NNM SE with Dell OpenManage HIP with DRAC or DRAC-comparable functionality.

### DRAC Functionality

Table 1-1 shows the in-band management features, and Table 1-2 shows the out-of-band management features.

For additional information, see the Dell Web site ([www.dell.com](http://www.dell.com)).

**Table 1-1. Dell PowerEdge System In-Band Management Features (2100, 2200, 4100, 4200, and 6100)**

In-Band Management Features	2100		2200		4100	4200	6100	
	With DRAC	Without DRAC	With DRAC	Without DRAC	ESM (DRAC)	ESM (DRAC)	With Intel SMM	Without Intel SMM
Temperature management	Y	Y	Y	Y	Y	Y	Y	Y
Voltage management	Y	Y	Y	Y	Y	Y	Y	Y
Current management	N	N	N	N	Y*	Y*	Y	Y

\* Present only on systems equipped with power-supply paralleling board.

NOTE: For the full name of an abbreviation used in this table, see the Glossary at the end of the guide.

**Table 1-1. Dell PowerEdge System In-Band Management Features (2100, 2200, 4100, 4200, and 6100) (continued)**

In-Band Management Features	2100		2200		4100	4200	6100	
	With DRAC	Without DRAC	With DRAC	Without DRAC	ESM (DRAC)	ESM (DRAC)	With Intel SMM	Without Intel SMM
Fan management	RPM	On/off	RPM	On/off	RPM	RPM	On/off	On/off
Chassis intrusion detection	N	N	N	N	N	Y	N	N
Fan speed control to minimize noise	N	N	N	N	N	N	N	N
Separate hard-disk drive fault LED	N	N	N	N	N	N	N	N
Temperature/fan fault LED	N	N	N	N	N	N	N	N
Power/voltage fault LED	N	N	N	N	N	N	N	N
Automatic hung server recovery (OS watchdog)	Y	Y	Y	Y	Y	Y	Y	Y
Remote system reset	Y	Y	Y	Y	Y	Y	Y	Y
Remote system power off	Y	Y	Y	Y	Y	Y	Y	Y
Remote system power cycle	Y	N	Y	Y	Y	Y	Y	N
Nonvolatile BIOS POST logs	Y	N	Y	N	Y	Y	Y	N
Nonvolatile event logs	Y	N	Y	N	Y	Y	N	N
Power supply status	N	N	N	N	Y*	Y*	Y	Y
Power utilization and redundancy	N	N	N	N	Y*	Y*	Y	Y
Management of internal SCSI backplane	N	N	N	N	Y	Y	Y	Y
Management of external PowerEdge SDS 100 disk pod (backplane and PSPB)	Y	N	Y	N	Y	Y	Y	Y
ECC memory event notification	N	N	Y	N	N	Y	N	N

\* Present only on systems equipped with power-supply paralleling board.

NOTE: For the full name of an abbreviation used in this table, see the Glossary at the end of the guide.

**Table 1-2. Dell PowerEdge System Out-of-Band Management Features (2100, 2200, 4100, 4200, and 6100)**

Out-of-Band Management Features	2100		2200		4100	4200	6100	
	With DRAC	With-out DRAC	With DRAC	With-out DRAC	ESM (DRAC)	ESM (DRAC)	With Intel SMM	With-out Intel SMM
Connectivity using modem	Y	N	Y	N	Y	Y	Y	N
Connectivity using NIC and TCP/IP	N	N	N	N	N	N	N	N
Monitor system health	Y	N	Y	N	Y	Y	Y	N
BIOS POST logs	Y	N	Y	N	Y	Y	Y	N
Event logs	Y	N	Y	N	Y	Y	Y	N
Remote console redirection	N	N	N	N	N	N	Y	N
Remote system power on/off cycle	Y	N	Y	N	Y	Y	Y	N
Remote system reset	Y	N	Y	N	Y	Y	Y	N
Remote OS shutdown	N	N	N	N	N	N	Y	N
Battery backup	N	N	N	N	N	N	Y	N
Alert notification using modem/NIC to management station and console	Y	N	Y	N	Y	Y	Y	N
Alert page to administrator	N	N	N	N	N	N	Y	N
Security using callback number	Y	N	Y	N	Y	Y	N	N
Security using administrator password	N	N	N	N	N	N	Y	N

NOTE: For the full name of an abbreviation used in this table, see the Glossary at the end of the guide.

### DRAC Version 2.0 Functionality

Table 1-3 shows the in-band management features, and Table 1-4 shows the out-of-band management features.

For additional information, see the Dell Web site ([www.dell.com](http://www.dell.com)).

**Table 1-3. Dell PowerEdge System In-Band Management Features for DRAC Version 2.0-Capable Systems (2300, 6300)**

<b>In-Band Management Features</b>	<b>With DRAC version 2.0</b>	<b>Without DRAC version 2.0</b>
Temperature management	Y	Y
Voltage management	Y	Y
Current management	Y <sup>1</sup>	Y <sup>1</sup>
Fan management	RPM	RPM
Chassis intrusion detection	Y	Y
Fan speed control to minimize noise	Y	Y
Separate hard-disk drive fault LED	Y <sup>2</sup>	Y <sup>2</sup>
Temperature/fan fault LED	Y <sup>2</sup>	Y <sup>2</sup>
Power/voltage fault LED	Y <sup>2</sup>	Y <sup>2</sup>
Automatic hung server recovery (OS watchdog)	Y	Y
Remote system reset	Y	Y
Remote system power off/cycle	Y	Y
Nonvolatile BIOS POST logs	Y	Y
Nonvolatile event logs	Y	Y
Power supply status	N	N
Power utilization and redundancy	N	N
Management of internal SCSI backplane	Y <sup>3</sup>	Y <sup>3</sup>
Management of external PowerEdge SDS 100 disk pod (backplane and PSPB)	Y <sup>4</sup>	Y <sup>4</sup>
ECC memory event notification	Y	Y

<sup>1</sup> Present only on systems equipped with power-supply paralleling board

<sup>2</sup> Present in some systems; refer to your system User's Guide

<sup>3</sup> Present only with optional active SCSI backplane

<sup>4</sup> Available for 2300 only

*NOTE: For the full name of an abbreviation used in this table, see the Glossary at the end of the guide.*

**Table 1-4. Dell PowerEdge System Out-of-Band Management Features for DRAC Version 2.0-Capable Systems (2300, 6300)**

<b>Out-of-Band Management Features</b>	<b>With DRAC version 2.0</b>	<b>Without DRAC version 2.0</b>
Connectivity using modem	Y	N
Connectivity using NIC and TCP/IP	Y	N
Monitor system health	Y	N
BIOS POST logs	Y	N
Event logs	Y	N
Remote console redirection	Y	N
Remote system power on/off/cycle	Y	N
Remote system reset	Y	N
Remote OS shutdown	Y	N
Battery backup	Y	N
Alert notification using modem/NIC to management station and console	Y	N
Alert page to administrator	Y	N
Security using callback number	Y	N
Security using administrator password	Y	N

*NOTE: For the full name of an abbreviation used in this table, see the Glossary at the end of the guide.*

## **HP OpenView NNM SE CD Demonstration and Computer-Based Training**

The `nnm_cbt` directory on the *HP OpenView Network Node Manager Special Edition CD* contains a general-purpose multimedia demonstration of NNM's features and benefits and a detailed computer-based training (CBT) module for the NNM Windows NT version. The demonstration takes about 20 minutes, and the CBT can take up to 4 hours. This tutorial does not distinguish between Enterprise, Unlimited, 250, or SE versions of the product and requires a computer running Windows NT or Windows 95 and a CD-ROM drive.

## **Getting Help**

If you receive an error message, see “Messages” in the online *Dell NNM SE Tools Help* and perform the corrective actions recommended. If the problem persists, see “Contacting Dell” in the online *Dell NNM SE Tools Help* for instructions on obtaining technical assistance.







## CHAPTER 2

# ***Installation and Upgrade Procedures***

This chapter provides the software installation and upgrade procedures for the HP OpenView Network Node Manager Special Edition (NNM SE) with the Dell OpenManage Hardware Instrumentation Package (HIP). It addresses the following managed server components:

- Dell managed nodes servers
- Management station
- Remote console

### ***General System Requirements***

The following subsections provide the general system requirements for Dell managed node servers, management station, and remote console.

#### ***Dell Managed Node Servers***

The following are the general system requirements for a managed node server.



*NOTE: If you are connecting a Dell PowerEdge Scalable Disk System 100 (SDS 100) storage system, perform the steps described in "Connecting the SDS 100 to the Host Computer" in Chapter 2 of the Dell PowerEdge SDS 100 Storage System Installation and Service Guide **before** continuing with this chapter.*

You need the correct basic input/output system (BIOS) version or embedded server management (ESM) firmware version for your system. Check the following sources:

- Dell HIP readme file (**hipread.txt**) on the *HP OpenView Network Node Manager Special Edition CD* for information on the BIOS, for information on firmware versions required for your system, and for instructions on downloading the correct versions if necessary
- Service and Support area of the Dell Web site (**www.dell.com**) for Flash BIOS and firmware revisions for each Dell PowerEdge server model

## Operating System Requirements

The following are operating system requirements for a managed node server:

- One of the following operating systems:
  - Microsoft Windows NT 3.51 with Transmission Control Protocol/Internet Protocol (TCP/IP) networking installed and configured
  - Microsoft Windows NT 4.0 Server/Workstation with TCP/IP networking installed and configured
  - Novell NetWare 4.10 or later with Internetwork Package Exchange (IPX) or TCP/IP networking installed and configured
- Simple Network Management Protocol (SNMP) service



*NOTE: Refer to your Dell documentation to determine which operating systems are supported on a particular server.*

## System Requirements

Managed node servers require a hard-disk drive with at least 20 megabytes (MB) of free space.

The following are modem requirements for out-of-band management:

- A US Robotics Sportster 28.8 or a compatible data/fax external modem to support the Dell OpenManage Remote Assistant console application available on Dell PowerEdge 4100 and 4200 systems and Dell PowerEdge 2100 and 2200 systems with installed Dell Remote Assistant Cards (DRACs). This modem is attached to the ESM or DRAC card using the external connector on the managed node.



*NOTE: For information on configuring and using the modem with managed node servers, see "Configuring a Modem" found later in this chapter.*

- An optional Intel server monitor module (SMM) card for the Dell PowerEdge 6100 system to support out-of-band, modem dial-up operation. An Intel LANDesk Server Manager (LDSM) 2.52 with Dell HIP 2.2 managed node is required on PowerEdge 6100 systems to support the SMM card. For information on system requirements, see your Intel SMM card documentation.
- An optional on-board PC Card modem for Dell PowerEdge systems equipped with DRAC version 2.0.

## Management Station and Remote Console

The following subsections list the operating system, specific system, and modem requirements for a management station or remote console.

## Operating System Requirements

The following are operating system requirements for the management station or remote console:

- Windows NT 3.51 or Windows NT 4.0 Server/Workstation with TCP/IP networking installed and configured. Refer to the system documentation for your operating system supported hardware.
- SNMP service



*NOTE: Refer to your Dell documentation to determine which operating systems are supported on a particular server.*

## System Requirements

The following are system requirements for the management station, which must be a Dell server or remote console:

- 180-megahertz (MHz) or faster Intel Pentium® microprocessor
- 64 MB of memory
- 100 MB of free space on one hard-disk drive, either file allocation table (FAT) or NT File System (NTFS)
- 120 MB of free initial-paging file space
- 800 x 600 monitor with super video graphics array (SVGA) graphics card
- Network adapter card

## Modem Requirements



*NOTE: Multiple modems are required on a management station if you want to use certain features simultaneously, such as monitoring server traps out-of-band while using the Dell OpenManage Remote Assistant.*

A US Robotics 28.8 or a compatible data/fax external modem is required for systems using Windows NT 3.51 to manage a DRAC-equipped managed node with the Remote Assistant and TCP/IP.



*NOTE: For systems running Windows NT 4.0 using TCP/IP, any Hayes-compatible modem with TAPI support can be used; however, Dell recommends using the US Robotics 28.8 modem.*

## Installing a Dell Managed Node

A Dell managed node may be installed for the Windows NT operating system or for Novell NetWare.

### Installing a Dell Managed Node for Windows NT



*NOTES: If you are upgrading a node, refer to "Upgrading a Dell Managed Node for Windows NT" found later in this chapter.*

If you are installing LDSM 2.52 with Dell HIP 2.2 on a Dell PowerEdge 6100 server with the HP OpenView NNM SE agents previously installed, you must first uninstall the HP OpenView NNM SE agents. Refer to "Installing LDSM Agents With a Previously Installed Dell HIP 3.2 Managed Node" found later in this chapter.

To install a Dell managed node for Windows NT, use the following procedure:

1. Insert the *HP OpenView Network Node Manager Special Edition CD* into your CD-ROM drive.

There is a short delay due to setup initialization.



**NOTE:** On systems using the Windows NT 3.51 operating system, run the **setup.exe** file in the root directory of the CD.

The **Dell OpenManage Software Installation** window appears with three option buttons:

- **Install Managed Node** — Installs a Dell managed node onto the Dell server. This node is the Dell HIP, which consists of services, files, and drivers to support management of Dell's servers and selected hardware.
  - **Install Dell NNM SE** — Installs NNM SE along with Dell system components on the management station, which provide consoles and management capabilities for Dell systems.
  - **Exit** — Exits setup.
2. Click **Install Managed Node**.

The **Welcome** screen appears.

3. Click **Next**.

The **Dell End User License Agreement** appears.

4. Click **Yes** if you accept the terms of the agreement and want to continue; click **No** to cancel the installation.

If you clicked **Yes**, the **User Information** window appears.

5. Enter your name and company name, and click **Next**.

The **Setup Options** window appears.

6. Click **Dell Managed NT Node**.

The **Choose Destination Location** window appears.

7. Select a destination directory. Click **Browse** to find the directory you want, or click **Next** to accept the default (**c:\dmi**) for Windows NT.

If you choose the default and it does not exist, a dialog box appears asking if you want the directory to be created. Click **Yes**.

The **Confirm New Directory** window appears.

8. Click **Yes** to accept the new directory or **No** to select another directory.  
The **Select Program Folder** window appears.
9. Click **Next** to accept the default name or type in another name. Then click **Next**.  
Your system begins copying files to the directory you have chosen.
10. Select the hardware components present on the server to install the instrumentation for that component.



*NOTE: For more information, see "Hardware Instrumentation Installation" found later in this section.*

When your system finishes copying files, the hardware component's readme files window may appear depending on the hardware instrumentation components you chose to install.

11. Click **Next**.  
The **Setup Complete** window appears.
12. Check the box if you want to read **hipread.txt** now or deselect it if you don't want to read it.
13. Click **Finish** to complete the setup process.

A dialog box appears informing you that you must reboot the system for the changes to take effect.



*NOTE: For a Dell managed node to also act as a management station, the SNMP **set-community-name** field must be assigned a value in the **snmpd.conf** file. Be sure to configure the **set-community-name** field on the NNM SE for a Windows NT operating system. To do this, you must modify **\$ov\_conf/snmpagent/snmpd.conf**. Remove the comment near the bottom of the **snmpd.conf** file and enter a value for the **set-community-name** field.*

14. Reboot your system.



*NOTE: If you want to install both a Dell managed node and a management workstation on the same server, make sure to reboot the server between the two installations.*

## **Installing a Dell Managed Node for Novell NetWare**



*NOTE: Installation of a NetWare managed node is executed from a system running the Windows NT operating system.*

To support SNMP set requests from a third-party SNMP management console, the NetWare server's **snmp.nlm** module must be loaded with certain set command line options. Either add the following command line to the **autoexec.ncf** file or use it to load the **snmp.nlm** module manually:

```
load snmp ControlCommunity=public TrapCommunity=public  
MonitorCommunity=public
```

In this command line, `public` is the SNMP trap community name configured for the SNMP service (the community name is case-sensitive).



*NOTES: You must ensure that **snmp.nlm** is not automatically loaded by another **.nlm** file because the parameters must be specified for **snmp.nlm** when it is first loaded.*

*If you are using Netware 4.10 or 4.11, SNMP is usually configured and implemented by loading **inetcfg.nlm** (the Internetworking Configuration NetWare Loadable Module [NLM]). See your Netware 4.1x user's guide for more information.*

To install a Dell managed node for NetWare, use the following procedure:

1. Map a drive to the **sys** volume of the NetWare server from a Windows NT system.
2. Insert the *HP OpenView Network Node Manager Special Edition CD* into your CD-ROM drive.

There is a short delay due to setup initialization.

On systems using the Windows NT 3.51 operating system, run the **setup.exe** file in the root directory of the CD.

The **Dell OpenManage Software Installation** window appears with three options:

- **Install Managed Node** — Installs a Dell managed node onto the Dell server. This node is the Dell HIP, which consists of services, files, and drivers to support management of Dell's servers and selected hardware.
  - **Install Dell NNM SE** — Installs NNM SE along with Dell system components on the management station, which provide management capabilities for Dell systems.
  - **Exit** — Exits installer.
3. Click **Install Managed Node**.  
The **Welcome** screen appears.
  4. Click **Next**.  
The **Dell End User License Agreement** appears.
  5. Click **Yes** to continue or **No** to cancel the installation.  
If you clicked **Yes**, the **User Information** window appears.
  6. Enter your name and company name, and click **Next**.  
The **Setup Options** window appears.
  7. Click **Dell Managed NetWare Node**.  
The **Choose Destination Location** window appears.

8. Select a destination directory. Click **Browse** to find the drive mapped to the NetWare drive. After you have selected the NetWare drive, you must type `system` in the drive path.

If you choose the default directory and it does not exist, a dialog box appears asking if you want the directory to be created. Click **Yes**.

The **Confirm New Directory** window appears.

9. Click **Yes** to accept the new directory or **No** to select another directory.

Your system begins copying files to the directory you have chosen.

10. Select the hardware components present on the server to install the instrumentation for that component.



*NOTE: For more information, see "Hardware Instrumentation Installation" found later in this section.*

Your system begins copying files to the directory you have chosen.

The following message appears:

```
Updating autoexec.ncf completed successfully. Restart the
NLMS for changes to take effect.
```

11. Click **OK**.

When your system finishes copying files, the **Setup Complete** window appears.

12. Click **Next**.

The **Setup Complete** window appears.

13. Click **Finish** to complete the setup process.

14. Reboot your system.

## **Upgrading a Dell Managed Node for Windows NT**



*NOTE: Close all Dell OpenManage applications and OpenView applications before upgrading the node.*

You can only upgrade a node to Dell HIP version 3.2 if it is installed with Dell HIP 3.0 or later. If you are running LDSM 2.52 with Dell HIP 2.2, you must uninstall it before installing Dell HIP 3.2.



*NOTE: To upgrade a NetWare node, you must uninstall the current version and then install the newer version.*

To upgrade a node, use one of the following procedures depending on the version of NNM SE you already have installed.

## If a Previous Version of Dell HIP Is Installed

After you have clicked **Yes** to continue the installation (step 5 of the procedure described in “Installing a Dell Managed Node for NetWare”), perform the following steps:

1. Click **Dell Managed NT Node**.

The following message appears:

You have a previous version of Dell HIP installed on this system. Do you want to upgrade to 3.2?

To stop the upgrade process, click **No**.

To continue the upgrade process, click **Yes**.

The **Select Program Folder** window appears.

2. Click **Next** to accept the default or type in another name. Then click **Next**.

Your system begins copying files to the directory you have chosen.

3. Select the hardware components present on the server to install the instrumentation for that component.



*NOTE: For more information, see “Hardware Instrumentation Installation” found later in this section.*

When your system finishes copying files, the hardware component’s readme files window may appear depending on the hardware instrumentation components you chose to install.

4. Click **Next**.

The **Setup Complete** window appears.

5. Check the box if you want to read **hipread.txt** now or deselect it if you don’t want to read it.
6. Click **Finish** to complete the setup process.

A dialog box appears informing you that you must reboot the system for the changes to take effect.



*NOTE: For a Dell managed node to also act as a management station, the SNMP **set-community-name** field must be assigned a value in the **snmpd.conf** file. Be sure to configure the **set-community-name** field on the NNM SE for a Windows NT operating system. To do this, you must modify **\$ov\_conf/snmpagent/snmpd.conf**. Remove the comment near the bottom of the **snmpd.conf** file and enter a value for the **set-community-name** field.*

7. Reboot your system.





*NOTE: If you want to install both a Dell managed node and a management workstation on the same server, make sure to reboot the server between the two installations.*

## **If a Current Version of Dell HIP Is Installed**

After you have selected a Windows NT or NetWare installation and the You have a current version of Dell OpenManage HIP installed. Do you want to install additional hardware components? message appears, perform these steps:

1. Click **Yes** to continue to add hardware components.
2. Click **No** and the following message appears.  

```
Do you want to overwrite the current installation of Dell
OpenManage HIP?
```
3. Click **Yes** to install or click **No** to stop the installation process.

## **To Uninstall Hardware Components Installed Separately**

Double-click the **Uninstall Hardware Components** icon in the **Dell Managed Node** folder. Doing so uninstalls only the hardware components that you installed separately.



*NOTE: To uninstall originally installed components, refer to “Uninstalling a Dell Managed Node From a Windows NT Server” found later in this chapter.*

## **Hardware Instrumentation Installation**

Instrumentation for a hardware vendor component has to be running on the managed server in order for the console application to be able to manage/monitor it. A check box is provided for the different instrumentation that can be installed as part of the Dell HIP node installation process.

To install a particular hardware component, check the box corresponding to the hardware installed on the managed server. The drivers for the respective hardware must be installed prior to installation of the instrumentation. In some cases, the driver is included as part of the Dell HIP managed node installation process when the component is chosen (for example, DRAC version 2.0).

After the chosen hardware component instrumentation is installed as part of the Dell HIP node installation, remember to reboot the system. The instrumentation and required services start automatically. If they fail to start, that component may not be manageable from the management console.



*NOTE: The Dell Inspector is automatically installed when the Dell managed node is installed. On the managed node server, the Dell Inspector starts a service called **dmisrv** for use with the Microsoft Systems Management Server (SMS) database. Program folders allow for launching the Dell Inspector from the **Start** button.*

The hardware component instrumentation is as follows:



- DRAC version 2.0

*NOTE: If you do not have a DRAC version 2.0 card, you should not install DRAC version 2.0 instrumentation (for example, if you have a PowerEdge 2200 system with DRAC or a PowerEdge 6100 system with a SMM card).*



- Dell PowerEdge Expandable RAID Controller
- Adaptec Comprehensive Input/Output (CI/O) Array-Based Management

*NOTE: The Adaptec CI/O Array-Based Management instrumentation check box is selected by default because the small computer system interface (SCSI) controller is on the system board.*



- Adaptec Duralink Server Manager

*NOTE: To run the Adaptec Duralink SNMP Manager for web-based management of Adaptec Duralink network interface controllers (NICs), install Microsoft Internet Explorer 3.0 or later and a World Wide Web (WWW) server before installing the management station.*

On Microsoft Windows NT Workstations, the Microsoft **Peer Web Services** provide an Internet Service Manager (ISM) that configures the directories for the application.

On Microsoft Windows NT Server operating systems, the Microsoft Internet Information Service (IIS) provides the necessary setup.



*NOTE: For further information, refer to "Adaptec Duralink Server Manager" found later in this chapter.*

- IBM local area network (LAN) adapter Desktop Management Interface (DMI) support
- Intel DMI 2.0 network adapter



*NOTE: The management information format (MIF) for the IBM LAN Adapter card and the Intel Network Adapter card can be browsed by using the Dell Inspector.*

## **Management Station Requirements**

To install either Microsoft **Peer Web Services** or Microsoft IIS, use the following procedure:

1. Click the **Network** applet in the **Control Panel**.
2. Click the **Services** tab in the **Network** applet.
3. Click **Add...**

A window appears containing a list of services that can be installed from either the Windows NT Workstation or the Windows NT Server CD.

4. Select **Microsoft Peer Web Services** or **Microsoft Internet Information Service** from the list.
5. Insert the Windows NT Workstation or Windows NT Server CD into your CD-ROM drive.

A window appears prompting you for the location drive and directory.

6. Enter the correct drive and directory.

For example: e:\i386.

7. Click **OK** to install the service.

The system places a folder for Microsoft IIS in the **Start —> Programs** menu.

8. Restart your system.

The WWW service starts. The WWW service can be seen on the ISM in the Microsoft IIS folder.



*NOTE: If you do not see the WWW service listed in the ISM, the installation was not successful. Install the service again.*

## **Installing the Management Station**



*NOTES: The system chosen as the management station must be a Dell server.*

*If you are installing LDSM 2.52 with Dell HIP 2.2 on a Dell PowerEdge 6100 server, refer to “Installing LDSM Console With the HP OpenView NNM SE Management Station” found later in this chapter.*

*If you are upgrading a management station, refer to “Upgrading a Management Station” found later in this chapter.*

To install the management station, use the following procedure:

1. At the **Dell OpenManage Software Installation** window, click the **Install Dell NNM SE** option.

The **Software License Agreement** window appears.

2. Read the software license agreement.

To accept the license agreement, click **Yes**. The **Choose Destination Location** screen appears.

3. Select a destination directory. Click **Browse** to find the directory you want, or click **Next** to accept the default, `c:\openview`.

The **Setup Option** window appears with two setup options:

- **Typical** — Installs OpenView management station and remote console components
  - **Remote Console** — Installs remote console capabilities
4. Click **Typical**.

The **Select Program Folder** window appears.

5. Select **HP OpenView** (the default) and then click **Next**.

The **SNMP Configuration** window appears.

6. Enter the community name for your default gateway, and click **Next**.

The **Start Copying Files** window appears.

7. Click **Next**.

Your system begins copying files to the directory you have chosen. The following message appears:

```
If you want to support Dell HIP 3.0 PowerEdge Expandable
RAID Controller agents, click Yes. Otherwise, click No.
```

8. Click **Yes** to support Dell HIP agents; otherwise, click **No**.

When your system finishes with the HP OpenView portion, the **Dell Console Install** window appears. Your system begins copying files required for Dell components of NNM SE.

The **Setup Complete** window appears.

9. Check the box to read the **hipread.txt** file. If you do not want to read the file at this time, deselect the box.
10. Click **Finish** to complete the setup process.

A window appears and states that you must reboot the system for the changes to take effect.

11. Reboot your system.

## Upgrading a Management Station



*NOTE: Close all Dell OpenManage applications and OpenView applications before upgrading the management station.*

To upgrade a management station, use one of the following procedures depending on the version of NNM SE that you already have installed.

## ***If a Previous Version of Dell NNM SE Is Installed***

After you have chosen the community name for your default gateway (step 6 of the procedure described in “Installing the Management Station”), the following message appears:

You have a previous version of Dell NNM SE installed. Do you want to upgrade to 1.2?

To stop the upgrade process, click **No**.

To continue the upgrade process, click **Yes**. Your system begins copying files. The following message appears:

If you want to support Dell HIP 3.0 PowerEdge Expandable RAID Controller agents, click Yes. Otherwise, click No.

## ***If a Current Version of Dell NNM SE Is Installed***

After you have chosen the community name for your default gateway (step 6 of the procedure described in “Installing the Management Station”), the following message appears:

You have a current version of Dell NNM SE installed. Do you want to overwrite the current installation?

To stop the installation process, click **No**.

To continue the installation process, click **Yes**. Your system begins copying files. The following message appears:

If you want to support Dell HIP 3.0 PowerEdge Expandable RAID Controller agents, click Yes. Otherwise, click No.

## ***If Dell NNM SE Is Installed and You Want to Upgrade to the Full Version of NNM for Windows NT***

Install the HP OpenView NNM for Windows NT by running the setup program provided with NNM for Windows NT 5.02 or later. Dell HIP 3.2 will work with either NNM SE or NNM for Windows NT.



*NOTE: To uninstall the Dell OpenManage NNM SE and the HP Openview full version of NNM for Windows NT, double-click the **Uninstall Dell OpenManage Server Console** icon and the **Uninstall Network Node Manager** icon.*

## ***If the Full Version of NNM for Windows NT Is Installed and You Want to Install/Uninstall Dell OpenManage Server Console***

To install/uninstall the Dell OpenManage Server Console, follow the instructions in “Installing the Management Station” found earlier in this chapter. NNM SE detects that full versions of NNM for Windows NT exist and adds only the Dell OpenManage Server Console.

To uninstall the Dell OpenManage Server Console, use the following procedure:

1. Double-click the **Uninstall Dell OpenManage Server Console** icon in the **HP OpenView NNM/NT** folder.
2. Remove the following line from the **trapd.conf** file in the **<installing directory>\conf\c** directory:

```
CATEGORY 7 "Dell HIP Events"
```

Doing so removes **Dell HIP Events** from the **Event Categories** window. HP OpenView NNM for Windows NT remains fully functional.

## Installing the Remote Console



*NOTES: Remote console must be installed on a system running Windows NT other than the system being used as the management station. The remote console does not have to be a Dell server.*

*This procedure requires administrator privileges at the management station. Refer to the HP online manual, Using Network Node Manager Special Edition, for more information.*

The following steps must be implemented before installing the remote console:

1. At the management station, click the **Start** button and point to **Programs**.
2. Using Windows Explorer, open the **ovwdb.auth** file under the **<installing directory>\conf** directory.

If you have not previously associated an **.auth** file with Notepad, a dialog box appears and asks you which program to use to open this file. Select **Notepad** and click **OK**. The file opens in Notepad.

3. At the end of the file is the name of the system authorized as the management station. Add a line below that line identifying the system that is remotely using the management station as a base.
4. Save the file and exit.
5. Share the **<installing directory>** directory.

To install the remote console, use the following procedure:

1. At the **Dell OpenManage Software Installation** window, click the **Install Dell NNM SE** option.

The **Software License Agreement** window appears.

2. Read the software license agreement.

To accept the license agreement, click **Yes**. The **Choose Destination Location** screen appears.

3. Select a destination directory. Click **Browse** to find the directory you want, or click **Next** to accept the default, **c:\openview**.

If this is not a Dell server, a remote console is assumed. Skip this step and go to step 4.

The **Setup Option** window appears with two setup options:

- **Typical** — Installs OpenView management station and console components
- **Remote Console** — Installs remote console capabilities

4. Click **Remote Console**.

The **Remote Console Install** window appears.

5. Enter the name of the server that was installed as the management station and the shared directory name of the remote management station, and then click **Next**.

The **Select Program Folder** window appears.

6. Select the default folder or group, depending on your operating system, and then click **Next**.

The **Start Copying Files** window appears.

7. Click **Next**.

Your system begins copying files.

The setup process continues with installation of Dell system components.

When your system finishes this portion of the setup process, the **Setup Complete** window appears.

8. Check the box to read the **hipread.txt** file. If you do not want to read this file at this time, deselect the box.
9. Click **Finish**.

A window appears and states that you must reboot the system for the changes to take effect.

10. Reboot your system.

## **Uninstalling HP OpenView NNM SE**



**CAUTION:** Do not install HP OpenView NNM SE and then uninstall it without rebooting the system in between these procedures. Doing so could cause problems if you decide to reinstall HP OpenView NNM SE at a later time.



**NOTE:** You must close HP OpenView NNM SE before uninstalling it. Otherwise, the system considers it to be in use and will not uninstall it from your system.

To remove HP OpenView NNM SE from a system, use the following procedure:

1. Click the **Uninstall HP OV NNM SE** icon.

A window appears with the following message:

Uninstall NNM SE and all add-in components?

2. Click **OK**.

A window appears displaying uninstall information.

The **Remove Programs From Your Computer** window appears listing the files, folders, and directories being uninstalled.

A window appears informing you that the uninstall is completed.

3. Click **OK**.
4. Reboot your system.

## **Uninstalling a Dell Managed Node From a Windows NT Server**

To uninstall a Dell managed node from a Windows NT Server operating system, perform the following steps on the Windows NT Server operating system:

1. Click the **Uninstall Dell Managed Node** icon.

A window appears with the following message:

Uninstall Dell Managed Node?

2. Click **OK**.

A window appears displaying uninstall information.

The **Remove Programs From Your Computer** window appears listing the files, folders, and directories that are being uninstalled.

A window appears informing you that the uninstall is completed.

3. Click **OK**.

A window appears informing you that you must reboot the system for the changes to take effect.

4. Click **OK**.
5. Reboot your system.



## Uninstalling Hardware Components From a Windows NT Server

If you installed hardware components separately, an **Uninstall Hardware Components** icon is created in the **Dell Node** folder. Use this icon to uninstall the hardware components.

## Uninstalling a Dell Managed Node From a NetWare Server

To uninstall a Dell managed node from a NetWare server, perform the following steps at the NetWare system console prompt:

1. Type `dcuninst` and press <Enter>.
2. Remove the following lines from the **autoexec.ncf** file under the **system** directory:

```
REM*** Start Dell HIP Section ***  
DC_AUTO.NCF  
REM*** End Dell HIP Section ***
```



*NOTE: You must delete the **dc\_auto** line and the two remarked (REM) lines from the **autoexec.ncf** file before attempting to reinstall a Dell managed node to a NetWare Server.*

## Configuring a Modem

A modem can be configured for a Dell Remote Assistant Card and for a Dell Remote Assistant Server service on a management station.

### For Dell Remote Assistant Card

Depending on whether your system is equipped with DRAC or DRAC version 2.0, use the following instructions to configure a modem.

#### PowerEdge Servers Equipped With DRAC

To support the DRAC feature available on Dell PowerEdge 4100 and 4200 and DRAC-equipped PowerEdge 2100 and 2200 systems, the US Robotics Sportster 28.8 or a compatible data/fax external modem connected to the DRAC must be configured to communicate with the Remote Assistant. To configure the modem, set the modem switches as shown in Table 2-1.



*NOTE: To ensure proper initialization of the modem, always connect the modem to its power source and turn it on **before** you turn on the system.*

**Table 2-1. Modem Switch Settings**

<b>Switch</b>	<b>Setting</b>	<b>Description</b>
SW1	On (down)	DTR Override
SW2	On (down)	Num Result Codes
SW3	On (down)	Disp Result Codes
SW4	On (down)	No Echo
SW5	Off (up)	AA on
SW6	Off (up)	CD Norm
SW7	On (down)	Load Fact Defaults
SW8	On (down)	SMART Node

*NOTE: For the full name of an abbreviation used in this table, see the Glossary at the end of the guide.*

### **PowerEdge Servers Equipped With DRAC Version 2.0**

Refer to your DRAC version 2.0 documentation for configuration information regarding the card and optional PC Card modem.

### **For Dell Remote Assistant Server Service on a Management Station**

Use the **Remote Assistant Modem Configuration** dialog box to configure the modem.

- If you are using the US Robotics Sportster 28.8 or a compatible data/fax external modem to connect to a PowerEdge system equipped with DRAC, the switch settings of the dial-out modem are the same as those shown in Table 2-1.
- For Dell PowerEdge servers equipped with DRAC version 2.0, set up the dial-out modem to correspond to the settings of the PC Card modem on your DRAC version 2.0.

Launch the Remote Assistant from the **Tools—>Dell** submenu.

## **Console Applications Installed With HP OpenView NNM SE**

The following console applications are installed as part of the HP OpenView NNM SE management station installation process:

- Dell OpenManage Server Console
- Dell Inspector

- Dell OpenManage Remote Assistant and Dell Remote Assistant Server service
- Dell PowerEdge Expandable RAID Console
- Adaptec CI/O Array-Based Management
- Adaptec Duralink Server Manager
- American Power Conversion (APC) PowerNet Console
- MobileChoice Paging

If a managed server detected by the discovery process has hardware installed (except for MobileChoice Paging), the expanded node for the managed server shows an icon corresponding to the console application for that hardware.



*NOTE: You must install the Dell HIP on a server for the icons to appear. Icons for the vendor console do not appear for servers that have vendor hardware and software installed (Dell PowerEdge Expandable RAID Console and Adaptec CI/O Array-Based Management only).*

## **Dell OpenManage Server Console**

Dell OpenManage Server Console allows you to perform the following tasks:

- View the hardware configuration
- View the event and power-on self-test (POST) logs
- Configure actions on a server
- Browse the MIFs for DMI 2.0 managed node servers
- Configure security features
- Configure the DRAC version 2.0 card on the server

Dell OpenManage Server Console can be launched on a management station by double-clicking the icon in the expanded-node submap.

## **Dell Inspector**



*NOTE: The DMI version included in NNM SE supports only 32-bit operating systems. The Dell Inspector is compatible with Microsoft Windows 95 and Windows NT 4.0, but not with Windows 3.x.*

The Dell Inspector gives you the capability to view the configuration of the system and to browse the MIFs loaded on workstation, desktop, and portable computers.

The Dell Inspector can be launched by double-clicking the icon in the expanded-node submap.

## **Dell OpenManage Remote Assistant and Dell Remote Assistant Server Service**

The Dell Remote Assistant Server Service runs on a management station and manages connections to and from Dell PowerEdge servers equipped with DRACs.

The Remote Assistant allows you to view the following information:

- Health of the system
- POST logs
- Event logs
- Console redirection on servers equipped with DRAC version 2.0
- Control reset and power to the remote server.

The Remote Assistant can be launched from the **Tools**—>**Dell** submenu.

## **Dell PowerEdge Expandable RAID Console**

The Dell PowerEdge Expandable RAID Console application remotely manages servers installed with the Dell PowerEdge Expandable RAID Controller.

To launch the Dell PowerEdge Expandable RAID Console application, double-click the **PowerEdge RAID II Console** icon on the expanded-node submap.

## **Adaptec CI/O Array-Based Management**

The Adaptec CI/O Array-Based Management System manages/monitors servers equipped with Adaptec SCSI controllers. It monitors channels and devices configured on each channel.

To launch the Adaptec CI/O Array-Based Management System application, double-click the **Adaptec CI/O** icon on the expanded-node submap.



*NOTE: If the **Adaptec CI/O** icon does not appear on the expanded-managed node for NetWare servers, the SNMP agent for CI/O Array-Based Management has not been loaded on the NetWare server. At the NetWare server, type `load cio20` and press <Enter> to load the SNMP agent.*

When you open the Adaptec CI/O Console application on a managed node from the management station, the following message appears:

**Note:** The IPX networking protocol is not on your computer. This may affect your ability to manage some systems.

This message appears even if the IPX protocol for NetWare is installed.

## **Adaptec Duralink Server Manager**

The Adaptec Duralink Server Manager is a web-based management and administration utility used to manage Adaptec's Duralink NIC suite of products that include port aggregation and failover. Adaptec Duralink Server Manager provides server management capabilities that monitor Adaptec's NICs through the use of SNMP agents.

To launch the Adaptec Duralink Server Manager utility, double-click the **Adaptec Duralink** icon on the expanded-node submap.

The web browser starts and points to the following URL:

**http://<systemname>/AdaptecWeb/Applets/ServerAnim.html.hardware  
component**

To monitor the Adaptec Duralink Server Manager utility, use the following procedure:

1. Click the URL.

The AdaptecWeb Web site appears.

2. Click the hyperlinked **proceed** text.

A web page appears that displays the IP address of the system containing the Adaptec NIC.

3. Position the cursor in one of the cells to change it to an up-arrow.

4. Click one of the cells displaying the values.

A web page appears that displays a graph of NIC card activity for the parameters chosen in the Java applet dialog.

## **APC PowerNet Console**

The APC PowerNet Console manages the uninterruptible power supply (UPS) system installed on the managed servers.

To launch the PowerNet Console application, double-click the **APC PowerNet** icon on the expanded-node submap.



*NOTE: For the application icon to appear on the expanded-node submap, the APC PowerNet SNMP agents have to be installed on the managed server from the CD that is shipped with the UPS.*

## **MobileChoice Paging**

The MobileChoice Paging application allows the sending of pages on certain user-defined OpenView events. The management station needs to be equipped and configured with a modem before you use the MobileChoice Paging application. The paging application can be configured from either the **MobileChoice Paging** applet in the **Control Panel** or from the **MobileChoice Paging** —>**Configure** option under the **Tools** menu at the OpenView console.

Sending a page from HP OpenView can be done either by using the **Send Event(s) to Pager** action or by configuring an event itself.

IMCPage Actions allow you to add paging capability to a specific event.

For more information, refer to the *MobileChoice Paging for HP OpenView* help. To access the help file, follow these steps:

1. Start the MobileChoice Paging application.
2. Click the **Help** button to launch the help file.

## **Integrating SMS With NNM SE Through the Dell Inspector**

To integrate the SMS database with NNM SE, you must use the Dell Inspector. The Dell Inspector resides on the managed node server and sends information to the SMS server running on the management station where NNM SE is located.



*NOTES: The management station is the server running HP OpenView. The managed node is the server with the Dell Inspector installed.*

*Both Structured Query Language (SQL) server and SMS should be loaded on the management station for NNM SE. The client for SMS must be running on the server that you are going to set up as a Dell managed node.*

To integrate SMS with NNM SE, perform the following steps:

1. Using the *HP OpenView Network Node Manager Special Edition CD*, install the **Node** option on the server running the SMS client application.
2. At the management station, click the **SMS Administrator** icon.
3. Select **Sites** at the top left, and then select **File—>Properties**.

The **Properties** dialog box appears.

4. Click **Services**.

The **Services** dialog box appears.

5. Click **Proposed Properties**.
6. Click the **Very Fast** option in the right screen.
7. Close the **Services** dialog box.

A dialog box appears with the following message:

Do you want to update this site?

8. Click **OK** to save the changes.
9. At the Dell managed node, open the Dell Inspector.
10. Expand the MIF options you want to send to the management station, and then click **Mapping**.
11. Select the individual MIFs or click **Select All** to select the information to be sent to the management station.
12. Check the **Export to SMS** box.

13. Edit the name of the MIF being sent from **default.mif** in the dialog box, if necessary.
14. Click **OK**.

To send the MIF from the Dell managed node to the management station, perform the following steps:

1. Map a drive to the management station's **sms\_shr** directory (i.e., **f:\sms\_shr**).
2. At an MS-DOS<sup>®</sup> prompt, change to the **x86.bin** directory, type **invwin32/f/e** and press <Enter>.

When the command sent to the MIF has been registered, the following message appears:

```
-SMS 100%-
```

It may take a few minutes for the MIF to be sent across the network to the management station.

Dell MIF information appears in the **Personal Computer Properties** box of the server name for the Dell node inside the SMS Administrator.

## ***LDSM Support for SMM on Dell PowerEdge 6100 Servers***

The SMM card is supported by the LDSM Console and the LDSM/HIP 2.2 agents on the PowerEdge 6100 server. Console support is available only on supported management station operating-system platforms running Windows NT 3.51 or 4.0. Additional vendor support is provided by LDSM/HIP 2.2.

The LDSM/HIP 2.2 CD is shipped with the SMM card supplied with PowerEdge 6100 systems. If you need to use the SMM card for out-of-band management support, you *must* install the LDSM/HIP 2.2 agents on the PowerEdge 6100 server and install the LDSM Console components on the HP OpenView NNM SE management station. The LDSM Console is a launchable application available under the NNM SE **Tools** menu.

In-band management information for the PowerEdge 6100 servers with the LDSM/HIP 2.2 agents is provided through the Dell OpenManage Server Console on Dell-discovered servers.

For out-of-band management, you must run the SMM features in the LDSM Console application as follows:

1. Launch the LDSM Console from the **Tools→Dell→LDSM Console** on the toolbar.  
  
The **LDSM Console** window appears.
2. Click the **SMM** icon.

## **Installing LDSM Agents With No Previously Installed Dell HIP 3.2 Managed Node**

To install the LDSM agents with no previously installed Dell HIP 3.2 managed node, follow the instructions in the *Dell Hardware Instrumentation Package 2.2 for Intel LANDesk Server Manager 2.52 User's Guide* provided with the LDSM/HIP 2.2 CD kit.

## **Installing LDSM Agents With a Previously Installed Dell HIP 3.2 Managed Node**

To install the LDSM agents with a previously installed Dell HIP 3.2 managed node, you must first remove Dell HIP 3.1. Refer to "Uninstalling a Dell Managed Node From a Windows NT Server" found earlier in this chapter, and then reboot the system. Be sure to follow all uninstall directions carefully to remove any additional files left on the system.

Next, you must install the LDSM/HIP 2.2 managed node agents for the server. Follow the instructions in the *Dell Hardware Instrumentation Package 2.2 for Intel LANDesk Server Manager 2.52 User's Guide* provided with the LDSM/HIP 2.2 CD kit.

## **Installing LDSM Console With HP OpenView NNM SE Management Station**

The LDSM Console component can be installed before or after HP OpenView NNM SE management station installation. To install the LDSM Console, refer to the *Dell Hardware Instrumentation Package 2.2 for Intel LANDesk Server Manager 2.52 User's Guide* and the LANDesk Server Manager documentation.

To install the LDSM Console component, use the following procedure:

1. Select only the **Server Manager Console** option from the **LANDesk Server Manager Setup** screen.
2. Enter the directory location for the LDSM files.
3. When prompted to select the **Dell HIP Console** in the **Dell HIP Install Version 2.2** screen, do not select any options.

The only components needed to support the SMM card are the LANDesk Console components. No Dell console components are required.

During the LDSM installation, you may see the following message:

```
Setup was unable to shutdown the SNMP service because there
are other services running that depend on the SNMP service.
Setup cannot guarantee your installation will complete suc-
cessfully if the SNMP service is running.
```

The installation is successful but does not restart the SNMP service. The SNMP service will restart automatically after you reboot your system after completing these steps.

After completing the LDSM Console installation, you must update the **path** environment variable to include the directory specified during the LDSM installation. For example, if you choose the default for the LDSM installation, **c:\smm32**, you add the



**c:\smm32** directory to the **path** environment variable. You can make this modification to the environment variables in the **System Properties Environment** tab, which is accessible through the **Control Panel System** option. After making these changes, reboot your system.

Refer to your LANDesk Server Manager documentation for instructions on using the LDSM Console and SMM cards.





## **CHAPTER 3**

# ***Using NNM SE***

Network Node Manager Special Edition (NNM SE) delivers fault, configuration, and performance management. NNM SE can be used to perform the following tasks:

- Discover your network environment and monitor its status.
- Draw Internet Protocol (IP) or Internetwork Package Exchange (IPX) maps based on discovered information.
- Administer vendor devices that support the Simple Network Management Protocol (SNMP) or Desktop Management Interface (DMI) 2.0. NNM SE manages both standard and enterprise-specific management information base (MIB) objects.
- Include new, enterprise-specific MIBs in NNM SE's MIB. After you have loaded the new MIB module on the management station, you can access any of the MIB objects defined in that MIB schedule.
- Obtain and set values for MIB objects.
- Determine actions to be taken upon receiving an SNMP trap.
- Identify network faults and performance problems from one location and diagnose problems. This capability includes customizing and automating the monitoring of your network and the response of management stations to events.
- Discover personal computers that support DMI 2.0.
- Start Windows NT applets such as the Event Viewer, Performance Monitor, and Registry Editor from within NNM SE on remote Windows NT systems.
- Discover World Wide Web (WWW) servers and initiate a web browser to view their management pages.

## ***Accessing NNM SE***

Use the following procedure to access NNM SE:

1. From the **HP OpenView** folder or group, start NNM SE Services.
2. Select **Network Node Manager** to start the user interface.

NNM SE automatically starts all installed and registered applications.

## How to Use NNM SE

To use NNM SE, you must be able to perform the following tasks:

- Navigating through submaps
- Using the toolbar
- Performing actions on objects, including finding and selecting objects and using the selection list
- Working with windows
- Using dialog, text, list, and check boxes



*NOTE: For additional information, see the HP online manual, Using Network Node Manager Special Edition.*

When a map is opened, the **Home** submap is displayed. You can open additional submap windows to view multiple submaps at the same time. Each submap is displayed in its own window. A submap window consists of the following features:

- Menu bar
- Toolbar
- Viewing area
- Status bar

## Navigating Through NNM SE Submaps

Navigation between submaps of an open map can be done in the following ways:

- **Explodable Symbol** — Double-click an explodable symbol of the parent object of the submap to view the object's components.
- **Executable Symbol** — Double-click an executable symbol to launch an application.
- **Submap List** — Select a submap off the open map by pulling down the **Edit: Find—>Submap List** menu and selecting **Submaps in Map**.
- **Navigation Icons** — The navigation icons are located in the toolbar of each submap window as well as in the **Window** menu. The icons are as follows:
  - **Home**, which opens the home submap of the opened map
  - **Root**, which opens the root submap of the opened map
  - **Parent**, which opens the parent of a child submap

## Performing Actions on A Node

When managing a system on your network with NNM SE, you are performing actions on a node. To perform an action on a node, select the node and then select the menu

item that describes the action. To see the expanded-node submap, double-click the node.

## **NNM SE Icons**

HP OpenView NNM SE uses the icons shown in Table 3-1 to represent the systems.













**Table 3-1. NNM SE Icons**

<b>Icon</b>	<b>Description</b>
	Dell server/Windows NT
	Dell desktop computer/Windows NT
	Dell Net PC/Windows NT
	Dell portable computer/Windows NT
	Dell server/NetWare
	Dell desktop computer/Windows 95
	Dell Net PC/Windows 95
	Dell portable computer/Windows 95
	Dell server/unknown operating system
	Dell desktop computer/unknown operating system


## Server Console Icons

The Server Console, launched from the NNM SE managed node submap window, provides a user interface to the embedded hardware functions through which you can monitor and manage components in Dell servers. Server Console uses the icons shown in Table 3-2 to represent the devices in your Dell system.

**Table 3-2. Server Console Icon**

Icon	Description
	System
	Main chassis
	Temperature probe
	Fan probe
	Voltage probe
	Current probe
	Power supply
	Secondary chassis
	Information/status entry
	Writable (user-modifiable) parameter
	DRAC version 2.0 card
	Battery probe for DRAC version 2.0 card

The device status is indicated by the color of the icon:

- An icon in its normal color (usually green) indicates a normal status.
- A yellow icon indicates a warning condition, such as a voltage, current, temperature, or fan reading that has exceeded a warning threshold.
- A red icon indicates a critical alarm; the device has failed or has crossed a failure threshold and may fail.
- A  icon indicates an unknown state.

## **Discovery Monitor**

The Discovery Monitor is a background process that runs on a system management station along with the OpenView background process (**netmon**, **ovcapsd**, and so on). It listens to events from the OpenView background processes relating to the discovery of managed nodes. For a given discovered managed node, the Discovery Monitor queries the OpenView database and the managed node for additional information in order to determine if the node is actually a Dell system. Dell systems can be managed to a greater extent by Dell-specific management activities.

## **Status Manager**

The Status Manager is an application that is integrated with the NNM SE map display system. It has three primary responsibilities:

- Displays Dell systems (Dell managed nodes) with special Dell icons on the NNM maps.
- Places Dell managed node applications on the expanded-node submaps of Dell managed nodes.
- Maintains updated status indicators of Dell managed nodes. Status is actually a result of the compound status rules derived from the children of a Dell managed node that reside on the expanded-node submap (child submap) of that node.

The Status Manager also integrates additional features into the OpenView menu bar. There is a Dell menu option in the OpenView menu bar under the Tools menu. At the Dell menu, you will find the following options:

- Rediscover — Runs the discovery process against a selected node to determine if it is a Dell managed node. If the node is discovered to be a Dell system, the appropriate Dell icon is shown. Otherwise, a generic OpenView icon is shown.
- Dell Inspector — Launches the Dell Inspector against a DMI 2.0-compliant node.
- Dell OpenManage Remote Assistant — Launches the Dell OpenManage Remote Assistant console application.
- Trap Forwarder — Launches the Trap Forwarder application, which lets you configure traps to forward to another management station. This feature appears only on a management station.
- Dell Web Site — Launches the default Internet browser and connects to the Dell Web site, **www.dell.com**.
- LDSM Console — Launches the Intel LANDesk Server Manager (LDSM) Console if it is installed on the management station. This console can be used to manage Dell PowerEdge systems equipped with an Intel server monitor module (SMM) card.

## Trap Forwarder

The Trap Forwarder application lets you forward certain traps the management station receives to other management stations. Trap Forwarder consists of a user interface and a background process. All traps sent to the management station or remote console can have actions configured. For more information, see the HP online manual, *Using Network Node Manager Special Edition*.

### Trap Forwarder and OpenView

The Trap Forwarder user interface is launchable from **NNM SE Tools—>Dell—>Trap Forwarder** on the toolbar. The background process starts automatically if traps are configured and runs in the background when other OpenView background processes are started. The background process can be started and stopped using the **ovstart** and **ovstop** commands, respectively. Status can be viewed using **ovstatus**.

### How to Use Trap Forwarder



*NOTE: Traps must be configured to be forwarded from the managed node using the **Trap Destination** tab on the **Microsoft SNMP Properties** applet.*

The Trap Forwarder user interface consists of a list of servers from which traps can be received and a list of traps for various enterprises. A selection list displays the existing configuration for all traps that need to be forwarded from various servers.

To configure traps, use the following procedure:

1. Pull down the **Managed Nodes** menu, and then click **Forward For**.
2. Click the server that you want to configure or click the **All Servers** option.

If a previous configuration exists, the list of traps that need to be forwarded is displayed in the **Traps to be Forwarded** list. You can then add or remove previously configured traps from the list.

3. Click the traps you want to add, and then click **Add—>** or click **Add All**.

The traps appear in the **Traps to be Forwarded** list.

4. Click **Apply**.

The traps appear in the **Selection** list.

5. Click **OK**.



## Configuring the Destination for Forwarded Traps

To configure the SNMP service on a management station to forward traps to another management station, you must configure the SNMP trap destination(s) on the sending station as follows.



*NOTE: Do **not** use the SNMP Emanate Agent Trap Destination configuration specified in HP OpenView documentation.*

- For a Windows NT 3.51 server, click the **Control Panel** icon; then click the **Network** icon. Scroll down the list of services and select **SNMP Service**. Use the **Configure** dialog box to enter the IP address and community name of the desired trap destination(s).
- For a Windows NT 4.0 server, click the **Control Panel** icon. Click the **Services** tab, highlight the **SNMP Service**, and click **Properties**. From the **Microsoft SNMP Properties** dialog box, click the **Traps** tab. At the **Trap** dialog box, enter the IP address and community name of the desired trap destination(s).

## Configuring HIP-Generated Alert Actions

The following subsections cover configuring alert actions through the HIP Baseboard Agent, through SNMP traps for local server response, and through the Remote Assistant.

### Local Server Actions



*NOTE: Actions cannot be configured for NetWare nodes.*

For certain Hardware Instrumentation Package (HIP)-generated alerts, the Dell HIP also provides the capability to configure local server actions. To configure local server actions from the console, perform the following steps:

1. At the Dell OpenManage Server Console, click the **Configure Actions** tab to configure local server actions.

You must be logged in to configure local server actions. To log in, pull down the **File** menu and click **Login**.

2. Enter the application-specified login (`root`) and password (`calvin`).
3. Refer to the Dell NNM SE Tools help for information on configuring server actions. See "Using the Dell NNM SE Tools Help" found later in this chapter for instructions on accessing help.



*NOTE: For NetWare servers configured for broadcast action, the Dell HIP alert is automatically broadcast to every computer attached to the server.*

## **Dell OpenManage Remote Assistant Alert Actions**

You can configure a particular action to take place when an alert or event associated with a Dell enterprise occurs. Select **Event Configuration** from the **Options** menu of the NNM SE map user interface. The **Event Configuration** dialog box presents a list of enterprises and a list of associated events. The **Event Configuration Edit** menu provides options for viewing event descriptions and configuring actions. See the Network Node Manager help for detailed information on configuring events.

## **Windows NT Alerts Sent to the Windows NT Event Log**

All alerts generated by a Windows NT server are sent to the Windows NT event log on that server.

HIP-generated events appear on the following two logs:

- Windows NT system log, with `Dell Baseboard Agent` or `DRAC2 Agent` indicated as the source.
- Application log on the server, with `Dell Local Response Agent` indicated as the source.

Remote Assistant events appear on the following two logs:

- NNM SE event log
- Application log on the server, with `Dell Remote Assistant` indicated as the source.

## **Using the Dell NNM SE Tools Help**

Comprehensive online help, in the form of a standard Windows NT help file, is available to aid you in using the Dell NNM SE Tools components—the icons, messages, menu options, help screens, and dialog boxes—to monitor and manage your server environment.

You can display context-sensitive help as you use *Dell NNM SE Tools Help*. To do so, press the **<F1>** key.

To access *Dell NNM SE Tools Help* through the Server Console or the Remote Assistant, click **Help**—>**Help Topics**.

To access the main contents of the *Dell NNM SE Tools Help*, click one of the **Tools** components and then click **Contents** from the **Help** menu in the NNM SE submap toolbar. From **Contents**, click a topic or its icon to display a list of subtopics; then click a subtopic to display the desired information. Following are other hints for using the online help:

- Click **Glossary** to display a list of technical terms, abbreviations, and acronyms.
- To exit the online help at any time, click **Exit** in the button bar at the top of the window.



# APPENDIX A

## Frequently Asked Questions



**Why don't the Event and POST log tabs of the version 1.0 Server Console correctly display data when monitoring a Dell PowerEdge 2300 or 6300 server?**

Version 1.2 of the Server Console is required to correctly display this data.



**Why is some of the data in the basebrdd.mif meaningless when viewed through the Dell Inspector?**

Some of the data in the Dell Baseboard management information format (MIF) (**basebrdd.mif**) and other MIFs is represented in raw binary format. A dedicated application is required to format the raw data into readable form. Similar problems can be encountered when attempting to view this data through the Microsoft Systems Management Server (SMS), Simple Network Management Protocol (SNMP) browsers, and other MIF browsers.



**Why does a system that has been removed from the network continue to be displayed in the OpenView map?**

OpenView retains objects in its database for a user-configurable amount of time. It does so to minimize the amount of network traffic that results from the normal day-to-day operation of turning machines off and on. Objects can be manually deleted from the OpenView map.



**I have just installed OpenView and opened a network map. Why are some systems not present on the map?**

Discovery of systems on a network is a complex process and can take up to 24 hours. There are many variables that influence the discovery process. See the HP OpenView documentation for more information.



**One of the nodes in an OpenView map is reporting a failure status, but this status is not propagated up through the network. Why?**

The method of status propagation through the OpenView maps is user configurable. See the HP OpenView documentation for more information.



**What light-emitting diode (LED) flashes when the Adaptec Comprehensive Input/Output (CI/O) Blink Hard-Disk Drive Light feature is used?**

The hard-disk drive activity LED flashes at 1-second intervals. If there is any hard-disk drive activity, it may not be possible to differentiate normal hard-disk drive access from this feature.



**If the SMS is updating the database with the most current information every 24 hours, why don't I see previous history reports in the database reports that I view in SMS?**

The database is updated only if changes have been made to the server. For example, a voltage probe monitors the node first at midnight on Monday and then at midnight on Tuesday. If changes are detected, they will be logged to the database and a history will be created. If no changes were detected, a history will not be created.



**Why do I have one blank line on the top of most of my Dell MIF information databases within SMS?**

A single blank record gets sent with your MIF to the SMS primary site when the database is created. This blank record gets transported into the database at the Structured Query Language (SQL)/SMS primary site. The blank record has no affect on the Dell MIF/SMS functionality and can be disregarded.



**Why do some nodes in an OpenView map show up outside of NetWare and Windows NT segments?**

OpenView discovery scans the network for nodes using the Internetwork Package Exchange (IPX) protocol and Internet Protocol (IP). Those nodes using IP will be grouped into segments represented by their IP segment symbol, while those using IPX will be grouped into segments represented by the IPX segment symbol. If the **netmon** utility finds servers with multiple network interface cards (NICs), it assumes that the server is a router or a bridge. In this case, OpenView may display the server as an individual host outside the network segments.



**I'm using a Windows Internetworking Name Server (WINS) to resolve all of my names. I can ping my NetWare servers using their IP address, but not using their names. Why?**

Configuring NetWare servers into the WINS Static IP map should resolve this problem.



**Do I need a Domain Name System (DNS) or a WINS server to install OpenView?**

No. In very small networks, you can get by with just **HOSTS** files. As the network expands, **HOSTS** files are more difficult to maintain, in which case a DNS or WINS or both can be used for name resolution. On routed networks, **LMHOST** files may be needed.



**Do I need to provide a router address for OpenView to operate properly?**

Only if you are using a router to link to another network segment. Most routers keep an IP/Name map of the network segment in which they exist on cache memory. As a result, it is much easier for OpenView NNM SE to discover the nodes.



**Where are alert events logged by the Dell Remote Assistant Server?**

The events are logged into the Windows NT Application log on the management station where the Dell Remote Assistant Server Service is running.



**Why doesn't the Dell OpenManage Remote Assistant console application connect to PowerEdge servers 2100, 2200, 4100, and 4200 equipped with DRAC?**

Check your modem settings. The baud rate should be 9600.



**When I launch the Duralink web-based console application, why do I get the error "Failed. OVwinitsession, error 17, permission denied"?**

Modify the **ovw.auth** file in the **conf** directory under OpenView installation by adding + next to the server name.



**Why can't I enter values in the dialog box for Put UPS to Sleep functionality in the APC PowerNet application?**

The Put UPS to Sleep function is available only for a Universal Power Supply (UPS) that has the SNMP adapter. It is not available for a UPS running the software agent.



**Why does the HP OpenView NNM menu selection Fault->Test IP/TCP/SNMP report "Error: Could not connect to port 23: connection refused." for Windows NT systems?**

Port 23 is the port used for the TELNET service. TELNET is not installed on Windows NT systems by default; therefore, a TELNET request will fail.





# APPENDIX B

## ***Tivoli/Enterprise Console Requirements and Installation***

This product supports Dell Hardware Instrumentation Package (HIP) 2.2 or later integration with Tivoli/Enterprise Console version 2.6 and Tivoli/Enterprise Console Windows NT Adapter 3.1. Two components can be integrated with the Tivoli/Enterprise Console — the Dell PowerEdge Expandable Raid Controller agent and the Dell HIP agent.

Both of these components enter significant events into the Windows NT event log — the RAID controller event-logging agent enters RAID events and the Dell HIP agent enters HIP events. These events indicate failures, warnings, and recoveries. (The HIP recoveries include recoveries of system health monitors such as temperature readings, voltage readings, fan speeds, power supply status, and chassis intrusion.)

These Windows NT event log messages are converted to Tivoli event classes with the appropriate slot values. Event classes are defined hierarchically, with child classes inheriting attribute value defaults from the parent. The Dell event classes follow a simple hierarchy and are documented in the online *Dell NNM SE Tools Help* file.

### ***Requirements***

The following components are required:

- Dell PowerEdge server
- Microsoft Windows NT Server 4.0 operating system or later
- Tivoli/Enterprise Console 2.6 or later
- Tivoli/Enterprise Console Windows NT Event Adapter 3.1 installed on the managed server
- Windows NT event classes loaded into Tivoli/Enterprise Console rule base from the **tecad\_nt.baroc** file



*NOTE: See the Tivoli TME 10 Enterprise Console User's Guide for details on the previous two components.*

# Installation of RAID Controller Events With Tivoli/Enterprise Console

To install the RAID controller events with the Tivoli/Enterprise Console, perform the following steps on the Windows NT system to be monitored:

1. Stop the TECNTAdapter service by using the Windows NT **Control Panel**.
2. Copy the **dell\_prc.fmt** file from the **tivoli** directory on the CD to the directory where the Windows NT Event Adapter configuration file is installed (usually **usr\local\tivoli\bin\w32-ix86\tme\tecladapters\etc**).



*NOTE: Back up the **tecad\_nt.fmt** file before performing the following step.*

3. Append the **dell\_prc.fmt** file to the **tecad\_nt.fmt** file using the following command:

```
copy tecad_nt.fmt+DELL_PRC.FMT tecad_nt.fmt
```

4. Generate a new **.cds** file. Make the Windows NT Adapter **bin** directory (usually **usr\local\tivoli\bin\w32-ix86\tme\tecladapters\bin**) the current directory.
5. Issue the following command from the Windows NT Adapter **bin** directory:

```
nt_gencds ..\etc\tecad_nt.fmt ..\etc\tecad_nt.cds
```

6. Start the TECNTAdapter service by using the Windows NT **Control Panel**.

Perform the following steps on the host where the event server is located:

1. Copy the **dell\_prc.brc** file from the **tivoli** directory on the CD to the system running the Tivoli Enterprise Console server.
2. Create a new rule base by using the following command:

```
wcrtrb My_rb
```

3. Copy the current rule base to the new rule base by using the following command:

```
wcprb <current rule base> My_rb
```



*NOTE: This rule base must already include the classes from the **tecad\_nt.baroc** file.*

4. Import the RAID controller classes by using the following command:

```
wimprbclass DELL_PRC.BRC My_rb
```

5. Compile the rule base by using the following command:

```
wcomprules My_rb
```

6. Stop the event server by using the following command:

```
wstopesvr
```



7. Load the new rule base by using the following command:

```
wloadrb My_rb
```

8. Restart the event server by using the following command:

```
wstartesvr
```

## **Installation of Dell HIP Events With Tivoli/Enterprise Console**

To install the Dell HIP events with the Tivoli/Enterprise Console, perform the following steps on the Windows NT system to be monitored:

1. Stop the TECNTAdapter service by using the Windows NT **Control Panel**.
2. Copy the **dell\_hip.fmt** file from the **tivoli** directory on the CD to the directory where the Windows NT Event Adapter configuration file is installed (usually **\usr\local\tivoli\bin\w32-ix86\tme\tec\adapters\etc**).



*NOTES: Back up the **tecad\_nt.fmt** file before performing the following step.*

*For the Tivoli/Enterprise Console, if the Windows NT adapter registry entry for **SpaceReplacement** is changed from the default (**False**) to **True**, the **dell\_hip.fmt** file must be modified. All occurrences of **Dell Baseboard Agent** in the format strings must be replaced with **Dell\_Baseboard\_Agent** in the **dell\_hip.fmt** file.*

3. Append the **dell\_hip.fmt** file to the **tecad\_nt.fmt** file using the following command:

```
copy tecad_nt.fmt+DELL_HIP.FMT tecad_nt.fmt
```

4. Generate a new **.cds** file. Make the Windows NT Adapter **bin** directory (usually **\usr\local\tivoli\bin\w32-ix86\tme\tec\adapters\bin**) the current directory.
5. Issue the following command from the Windows NT Adapter **bin** directory:

```
nt_gencds ..\etc\tecad_nt.fmt ..\etc\tecad_nd.cds
```

6. Start the TECNTAdapter service by using the Windows NT **Control Panel**.

Perform the following steps on the host where the event server is located:

1. Copy the **dell\_hip.brc** file from the **tivoli** directory on the CD to your system.
2. Create a new rule base by using the following command:

```
wcrtrb My_rb
```



3. Copy the current rule base to the new rule base by using the following command:

```
wcprb <current rule base> My_rb
```

*NOTE: This rule base must already include the classes from the **tecad\_nt.baroc** file.*

4. Import the Dell Event classes by using the following command:

```
wimprbclass DELL_HIP.BRC My_rb
```

5. Compile the rule base by using the following command:

```
wcomprules My_rb
```

6. Stop the event server by using the following command:

```
wstopesvr
```

7. Load the new rule base by using the following command:

```
wloadrb My_rb
```

8. Restart the event server by using the following command:

```
wstartesvr
```



# Glossary

The following list defines or identifies technical terms, abbreviations, and acronyms used in Dell® user documents.

## **AC**

Abbreviation for alternating current.

## **APC**

Abbreviation for American Power Conversion.

## **backup**

A copy of a program or data file. As a precaution, you should back up your computer's hard-disk drive on a regular basis. Before making a change to the configuration of your computer, you should back up important start-up files, such as **win.ini** and **system.ini** for the Microsoft® Windows® 95 operating system.

## **BBS**

Abbreviation for bulletin board service.

## **BIOS**

Acronym for basic input/output system. Your computer's BIOS contains programs stored on a ROM chip. The BIOS controls the following:

- Communications between the microprocessor and peripheral devices, such as the keyboard and the video adapter
- Miscellaneous functions, such as system messages

The BIOS is a layer of software that isolates the operating system and application programs from the system's hardware.

By using the BIOS, the compatibility of these programs is enhanced.

## **block**

A typical unit of disk storage consisting of a small number of sectors. This term usually refers to the fundamental unit of storage provided by an operating system. See also **block size** and **striping**.

## **block size**

The size of a block. See also **block** and **striping**.

## **bus**

A bus forms an information pathway between the components of a computer. Your computer contains an expansion bus that allows the microprocessor to communicate with controllers for all the various peripheral devices connected to the computer. Your computer also contains an address bus and a data bus for communications between the microprocessor and RAM.

## **byte**

Eight bits of information, the basic data unit used by your computer.

## **cache**

To facilitate quicker data retrieval, a storage area for keeping a copy of data or instructions. For example, your computer's BIOS may cache ROM code in faster RAM. Or, a disk-cache utility may reserve RAM in which to store frequently accessed information from your computer's disk drives; when a program makes a request to a disk drive for data that is in the cache,

the disk-cache utility can retrieve the data from RAM faster than from the disk drive.

**CBT**

Abbreviation for computer-based training.

**CD-ROM**

Abbreviation for compact disc read-only memory. CD-ROM drives use optical technology to read data from CDs. CDs are read-only storage devices; you cannot write new data to a CD with standard CD-ROM drives.

**CI/O**

Abbreviation for comprehensive input/output.

**controller**

A chip or expansion card that controls the transfer of data between the micro-processor and a peripheral, such as a disk drive or the keyboard.

**CPU**

Abbreviation for central processing unit.

**Dell Remote Assistant Server Service**

Microsoft Windows NT<sup>®</sup> operating system service running on the management station, which provides for connectivity to DRAC-equipped Dell PowerEdge<sup>®</sup> systems.

**Desktop Manager**

Desktop Manager, a component of the Intel<sup>®</sup> LANDesk<sup>®</sup> Configuration Manager system management software, is used to manage clients after installing an operating system, management agents, and applications.

**device driver**

A device driver allows the operating system or a program to interface correctly with a peripheral, such as a printer or network card. Some device drivers—such as network drivers—must be loaded from initialization files or as memory-resident programs. Others—such as video drivers—must load when you start the program for which they were designed.

**diagnostics**

See **diskette-based diagnostics**.

**directory**

Directories help keep related files organized on a disk in a hierarchical, “inverted tree” structure. Each disk has a “root” directory; additional directories that branch off of the root directory are called *subdirectories*. Subdirectories may contain additional directories branching off of them.

**diskette-based diagnostics**

A comprehensive set of diagnostic tests for your Dell computer. To use the diskette-based diagnostics, you must boot your computer from the *Dell Diagnostics Diskette*. Refer to your *Diagnostics and Troubleshooting Guide, Installation and Troubleshooting Guide, or Service Guide* for a complete discussion about how to use the diskette-based diagnostics.

**DMI**

Abbreviation for Desktop Management Interface. DMI enables the management of your computer system’s software and hardware. DMI defines the software, interfaces, and data files that enable your system to determine and report information about its components.

If DMI is installed on your system, you can enable DMI support as you complete the setup of your system by double-clicking the DMI icon in the Windows Control Panel. For further instructions on enabling DMI support or for more information about DMI, refer to the DMI online help.

**DMTF**

Acronym for Desktop Management Task Force, a consortium of companies representing hardware and software providers, of which Dell Computer Corporation is a steering committee member.

**DNS**

Acronym for Domain Name System.

**DRAC**

Acronym for Dell Remote Assistant Card.

**ECC**

Abbreviation for error correction code.

**enterprise**

A systems-management software product that is either a source or a receiver of SNMP traps.

**ESM**

Abbreviation for embedded server management.

**FAT**

Abbreviation for file allocation table.

**FTP**

Abbreviation for file transport protocol.

**GB**

Abbreviation for gigabyte. A gigabyte equals 1024 MB or 1,073,741,824 bytes.

**guarding**

A type of data redundancy that uses a set of physical drives to store data and a single, additional drive to store parity data. Using guarding, the user's data is protected from the loss of a single drive. Guarding is sometimes preferred over mirroring because it is more cost effective in systems with a very high storage capacity. However, guarded configurations are significantly slower for applications that frequently write to the array, because each attempt to write to the array requires multiple read and write commands to maintain the parity information. If this is a problem, mirroring or duplexing is a better choice. See also **mirroring**, **RAID 4**, and **RAID 5**.

**GUI**

Acronym for graphical user interface.

**HIP**

Acronym for the Dell Hardware Instrumentation Package. HIP provides seamless integration with the Intel LANDesk Server Manager. Together, HIP and LANDesk Server Manager allow you to monitor your Dell servers and track status information about Dell server components.

**host adapter**

A host adapter implements communication between the computer's bus and the controller for a peripheral. (Hard-disk drive

controller subsystems include integrated host adapter circuitry.) To add a SCSI expansion bus to your system, you must install the appropriate host adapter.

**IIS**

Acronym for Internet Information Service.

**I/O**

Abbreviation for input/output. The keyboard and a printer, for example, are I/O devices. In general, I/O activity can be differentiated from computational activity. For example, when a program sends a document to the printer, it is engaging in I/O activity; when the program sorts a list of terms, it is engaging in computational activity.

**in-band**

Communication across the network between the console and server.

**IP**

Abbreviation for Internet Protocol.

**IPX**

Abbreviation for Internetwork Package Exchange.

**ISM**

Abbreviation for Internet Service Manager.

**LAN**

Acronym for local area network. A LAN system is usually confined to the same building or a few nearby buildings, with all equipment linked by wiring dedicated specifically to the LAN.

**LDSM**

Abbreviation for LANDesk Server Manager.

**LED**

Abbreviation for light-emitting diode. An electronic device that lights up when a current is passed through it.

**MB**

Abbreviation for megabyte(s). A megabyte equals 1,024 kilobytes or 1,048,576 bytes; however, when referring to hard-disk drive storage, the

term is often rounded to mean 1,000,000 bytes.

**MHz**

Abbreviation for megahertz.

**MIB**

Acronym for management information base.

**MIF**

Acronym for management information format. MIF is a file that contains information, status, and links to component instrumentation. MIF files are installed into the MIF database by the service layer. The content of a MIF is defined by a DMTF working committee and is published in the form of a MIF definition document. This document identifies the groups and attributes that are relevant to DMI-manageable components.

**mirroring**

A type of data redundancy that uses a set of physical drives to store data and one or more sets of additional drives to store duplicate copies of the data. Mirroring is the preferred data redundancy technique in lower-capacity systems and in systems where performance is extremely important. See also **guarding**, **RAID 1**, and **RAID 10**.

**NIC**

Abbreviation for network interface controller.

**NLM**

Abbreviation for NetWare Loadable Module.

**NNM SE**

Abbreviation for Network Node Manager Special Edition.

**NTSF**

Abbreviation for the NT File System option in the Windows NT operating system.

**out-of-band**

Communications that use a remote assistance card to remotely manage a server using a modem or an on-board NIC on the card. The out-of-band path is used for

remote management of a server or for accessing server information when the server or network is down.

**parameter**

A value or option that you specify to a program. A parameter is sometimes called a *switch* or an *argument*.

**PCI**

Abbreviation for Peripheral Component Interconnect.

**peripheral device**

An internal or external device—such as a printer, a disk drive, or a keyboard—connected to a computer.

**POST**

Acronym for power-on self-test. Before the operating system loads when you turn on your computer, the POST tests various system components such as RAM, the disk drives, and the keyboard.

**PSPB**

Abbreviation for power-supply paralleling board.

**RAID**

Acronym for redundant array of independent disks. This phrase was introduced by David Patterson, Garth Gibson, and Randy Katz at the University of California at Berkeley in 1987. The goal of RAID is to use multiple small, inexpensive disk drives to provide high storage capacity and performance while maintaining or improving the reliability of the disk subsystem.

Patterson, Gibson, and Katz described five different methods, which are known as RAID levels 1 through 5. Each level uses one or more extra drives to provide a means of recovering data lost when a disk fails, so that the effective failure rate of the whole disk subsystem becomes very low.

Recently, Katz has defined a sixth method, RAID 6, which improves reliability even further, and a configuration that provides no data recovery has popularly become known as RAID 0.

### **RAID 0**

RAID 0 is commonly called *striping*. This was not originally defined as a RAID level but has since come into popular use. In this array configuration, data is written sequentially across the available disks and no redundancy is provided. RAID 0 configurations provide very high performance but relatively low reliability. RAID 0 is the best choice when DSA controller cards are duplexed. See also **striping**.

### **RAID 1**

RAID 1 is commonly called *mirroring*. RAID 1 also uses striping, so RAID 1 may be regarded as the mirroring of RAID 0 configurations. RAID 1 is the best choice in high-availability applications that require high performance or relatively low data capacity. See also **mirroring**, **RAID 10**, **striping**.

### **RAID 4**

RAID 4 is commonly called *guarding*. It uses data striping, like RAID 0, but adds a single, dedicated parity drive. The parity data stored on this drive can be used to recover data lost from a single failed drive. RAID 4 configurations write data slowly because parity data has to be generated and written to the parity drive, and the generation of the parity data frequently requires reading data from multiple physical drives. See also **guarding** and **striping**.

### **RAID 5**

RAID 5, like RAID 4, is commonly called *guarding*. RAID 5 is identical to RAID 4, except that the parity data is distributed evenly across all physical drives instead of a parity drive. In configurations using a large number of physical drives in which a large number of simultaneous small write operations are being performed, RAID 5 offers potentially higher performance than RAID 4. RAID 4 and RAID 5 configurations are appropriate in high-availability applications where performance is less critical or where high data capacity is required. See also **guarding**.

### **RAID 10**

RAID 10 is a *mirroring* technique in which data is duplicated across two identical

RAID 0 arrays or hard-disk drives. All data on a physical drive in one array is duplicated, or *mirrored*, on a drive in the second array. Mirroring offers complete redundancy of data for greater data security. See also **mirroring**, **RAID 1**, and **striping**.

### **rpm**

Acronym for revolutions per minute.

### **SCSI**

Acronym for small computer system interface. An I/O bus interface with faster data transmission rates than standard ports. You can connect up to seven devices (15 for some newer SCSI types) to one SCSI interface.

### **SDS**

Abbreviation for Scalable Disk System.

### **sector**

The fundamental unit of data access for a hard-disk drive. For PC-compatible systems, a sector is usually 512 bytes. See also **block** and **block size**.

### **SMB**

Acronym for system management bus.

### **SMM**

Abbreviation for server monitor module. An ISA expansion card that provides a modem interface for out-of-band monitoring and control of a server.

### **SMP**

Abbreviation for Symmetric Multiprocessing.

### **SMS**

Abbreviation for Systems Management Server.

### **SNMP**

Abbreviation for Simple Network Management Protocol.

### **SQL**

Abbreviation for Structured Query Language.

### **striping**

In composite drivers with two or more physical drives, the drive array

subsystem uses a method of data storage called *striping*. With this method, data is divided into a series of pieces called *blocks* and each data block is stored on a different physical drive. When each drive contains a block of data, the process starts over with the first physical drive. By carefully selecting the size of the data block, the chance that the information needed can be read from or written to multiple physical drives at once is increased, greatly increasing the performance of the composite drive. See also **block**, **block size**, and **RAID**.

### **SVGA**

Abbreviation for super video graphics array.

### **syntax**

The rules that dictate how you must type a command or instruction so that the computer will understand it.

### **system memory**

System memory is a synonym for *RAM*.

### **system.ini file**

When you start Windows, it consults the **system.ini** file to determine a variety of options for the Windows operating system. Among other things, the **system.ini** file records which video, mouse, and keyboard drivers are installed for Windows.

Running the Control Panel or Windows Setup program may change options in the **system.ini** file. On other occasions, you may need to change or add options to the **system.ini** file manually with a text editor, such as Notepad.

### **TCP/IP**

Abbreviation for Transmission Control Protocol/Internet Protocol.

### **TIRCP**

Abbreviation for Transport Independent Remote Procedure Call.

### **trap**

An alert, error, or system message from a server reporting an exception (for example, a device failure or a threshold violation) in a server.

### **UDA**

Acronym for user-defined attribute.

### **UDP**

Abbreviation for User Datagram Protocol.

### **UPS**

Abbreviation for uninterruptible power supply. A battery-powered unit that automatically supplies power to your computer in the event of an electrical failure.

### **utility**

A program used to manage system resources—memory, disk drives, or printers, for example.

### **viewer**

A system running the **Remote Control Viewer** window, usually the console.

### **WINS**

Acronym for Windows Internetworking Name Server.

### **WWW**

Abbreviation for World Wide Web.





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